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Original Article

Parental History of Psychopathology and Attention Deficit Hyperactivity Disorder among Children

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ABSTRACT

Parental history of psychopathology has been linked to an increased risk of Attention Deficit Hyperactivity Disorder (ADHD) in children. Research suggests that genetic and environmental factors contribute to this association, highlighting the importance of early identification and intervention. **Objective:** To determine the association between family history of psychopathology and ADHD among children. **Methods:** This cross-sectional comparative analysis was carried out from December 2019 to June 2020 upon 64 children, presenting with ADHD and their parents, who presented to the General Psychiatric OPD and Child Psychiatric OPD of Department of Psychiatry, Liaquat University Hospital; Hyderabad and Jamshoro and Sir Cowasjee Jehangir Institute of Psychiatry, Hyderabad. Data were recorded onto a structured questionnaire containing inquiries pertaining to basic biodata, sociodemographic details and confirmatory diagnosis. **Results:** The mean age of the sample (children) stood at 9 ± 2 years while the maternal and paternal mean age stood at 33 ± 5 years and 32 ± 3 years, respectively. A majority (83%) of the sample (children) comprised of boys, while the remaining 17% were girls. The most common symptoms of ADHD reported by parents (among children) included aggression, hyperactivity and academic problems. Positive psychiatric history among mother, father and siblings was noted in 39.1%, 32.8% and 48.4% of the cases respectively. **Conclusions:** Parental psychopathology (most notably anxiety spectrum disorders and major depressive disorder) has been found to be associated with ADHD among children.

INTRODUCTION

ADHD is a brain condition where people might struggle with paying attention, being overly active and acting without thinking things through [1]. The prevalence of ADHD among children ranges from 2.2% to 17.8% worldwide and the prevalence is markedly higher (34%) in Pakistan [2]. The etiology of this condition is multi-factorial, and it is known that genetic factors predispose to its development. However, the onset of ADHD, manifestation of clinical symptoms and disease severity is largely dependent on many risk factors. Broadly categorized as either biological or environmental; the risk factors play a major decisive role [3]. Family plays a big role in how ADHD (Attention Deficit Hyperactivity Disorder) works. Some people think it's because of things like genes that run in families, while others say it's because of how the family environment is. It's hard to tell which one has a bigger impact because they're closely connected, but both are thought to be really important [4]. Researchers have hypothesized that the connection between parental psychopathology and ADHD among children also may be due to a shared genetic origin [5]. Literature offers ample evidence, indicative of the fact that both maternal and paternal psychiatric diagnoses are independently associated with offspring ADHD. Reports suggest a significant association between child ADHD and

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parental psychopathology, with the odds being 5.61 times higher than in comparison groups (CI 1.10–28.62) [6]. Whether it's because of genes or the environment, both are thought to affect ADHD through epigenetics. Genes can have an impact through stuff like X chromosomes passed down from the mom or the mitochondrial genome. On the other hand, the environment is always there and can affect ADHD all the time [7, 8]. Reciprocally, ADHD is a significant contributor to parental psychological distress and consequent psychopathology. Studies indicate that children with ADHD can affect family dynamics and parent-child relationships, leading to decreased parental confidence, increased stress and higher rates of parental mental health issues. Children with ADHD often exhibit non-compliant behavior, sibling and peer conflicts, and issues in school settings, further exacerbating parental challenges. This suggests that parents with mental health issues might be more involved in managing their child's ADHD symptoms [9]. The complex relationship between parental psychopathology and ADHD remains indefinable, suggesting a possible 'cycle of cause and effect' that is self-perpetuating, needs further investigation.

This research aimed to determine the association between family history of psychopathology and ADHD among children.

METHODS

This cross-sectional comparative analysis was carried out from December 2019 to June 2020 upon 64 children presenting with ADHD and their parents, to the General Psychiatric OPD and Child Psychiatric OPD of Department of Psychiatry Liaquat University Hospital; Hyderabad and Jamshoro and Sir Cowasjee Jehangir Institute of Psychiatry, Hyderabad. Children (aged 6 to 13 years) with ADHD brought by their parents were included in the study after taking written informed consent from the parents. While children with the history of neurological disease, epilepsy or significant head trauma and adopted children with no biological link to the parents and children of non-consenting parents were excluded from the study. 64 normal children without ADHD along with their both parents were taken as normal controls. Children were selected via non-probability consecutive sampling. Openepi sample size calculator was used for sample size calculation by taking prevalence of parental psychopathology i.e. Anxiety among with ADHD children as 4.3% and with margin of error as 5% and confidence level of 95% [10]. The study was approved by Research Ethics Committee of Liaquat University of Medical and Health Sciences (No. LUMHS/REC/-787). The parents of the children were invited to allow themselves and their children to participate in the study and written informed consent was obtained. Once enrolled in the study, the outcomes of the study were evaluated for assessing the presence of ADHD in children using DSM-5 criteria for ADHD, used for diagnosing based on specified symptom criteria and impairment and the Vanderbilt ADHD Diagnostic Parent Rating Scale which consists of 55 items and was scored based on the frequency of symptoms (never, occasionally, often, very often). The psychopathology among parents was measured via the MINI International Neuropsychiatric Interview 7.0.2, a structured interview with multiple modules, indicated the presence or absence of various psychiatric disorders. Self-made, structured questionnaire was developed which contained inquiries about biodata, sociodemographic, ADHD symptoms and history of ADHD and history of psychopathology among parents. Data were analyzed using Microsoft Excel 2016 and SPSS version 21.0. Qualitative data were expressed as number and percentage. Quantitative data were expressed as mean and standard deviation (mean ± SD). The association between parental psychopathology and child ADHD was measured using Chi-Square test. P value ≤ 0.05 was considered as statistically significant.

RESULTS

The mean age of the sample (children) stood at 9 ± 2 years while the maternal and paternal mean age stood at 33 ± 5 years and 32 ± 3 years, respectively. A majority (83%) of the sample (children) comprised of boys, while the remaining 17% were girls. The majority of the sample either weighed normal or were underweight. Only a small proportion weight more than the desired 5th percentile of the average for their respective age group as shown in table 1.

Table 1: Descriptive Statistics of the Sample

Variables	(Mean ± SD)/N (%)
Children's Mean Age (Years)	9 ± 2
Maternal Mean Age (Years)	33 ± 5
Paternal Mean Age (Years)	32 ± 3
Mean Weight of Children (Kg)	29.3 ± 2.1
Gender Distribution	
Boy	53 (83%)
Girl	11 (17%)
Weight Distribution	
Underweight	23 (35.9%)
Normal	29 (45.3%)
Overweight	12 (18.8%)

The most common symptoms of ADHD reported by parents (among children) included inattention, hyperactivity, impulsivity, aggression, and academic problems as shown in figure 1.

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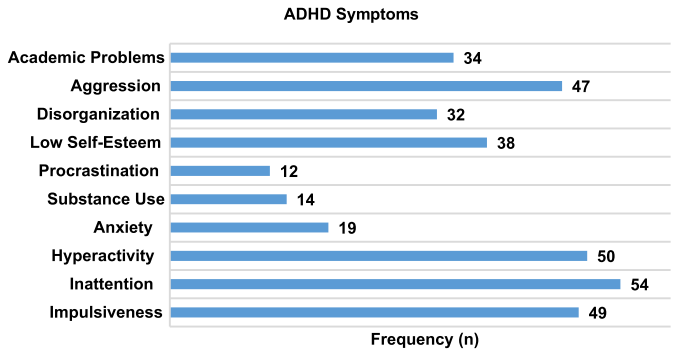

Figure 1: ADHD Symptoms Among Children

Table 2 presented the psychiatric history among parents and its association with ADHD in children. A significant association was found between maternal psychiatric history and ADHD in children, with 23.4% of mothers of ADHD children having a psychiatric history compared to 6.3% in the control group ($p < 0.05$). Similarly, 26.6% of fathers of ADHD children had a psychiatric history, compared to 9.4% in the control group ($p < 0.05$). These findings suggest a notable link between parental psychopathology and the prevalence of ADHD in their children.

Table 2: Psychiatric History Among Parents

Parental History Of Psychopathology		ADHD in Children N (%)		p-Value
		Yes	No	
Mother	Yes	15 (23.4%)	4 (6.3%)	<0.05
	No	49 (76.6%)	60 (93.8%)	
Father	Yes	17 (26.6%)	6 (9.4%)	<0.05
	No	47 (73.4%)	58 (90.6%)	

Table 3 summarized psychiatric diagnoses among parents. Major Depressive Disorder affected 7 mothers (46.7%) and 5 fathers (29.4%). Generalized Anxiety Disorder was found in 3 mothers (20%) and 4 fathers (23.5%). Suicidality was absent in mothers but present in 1 father (5.9%). Panic Disorder occurred in 1 mother (6.7%) and father (5.9%). Specific Phobia was reported in 1 father (5.9%). Obsessive Compulsive Disorder affected 2 mothers (13.3%) and 3 fathers (17.6%). Post-Traumatic Stress Disorder was identified in 1 father (5.9%). Other diagnoses were present in 2 mothers (13.3%) and 1 father (5.9%). Overall, 15 maternal diagnoses and 17 paternal diagnoses were recorded.

Table 3: Psychiatric Diagnoses in Parents of ADHD Children

Diagnosis	Mother N (%)	Father N (%)
Major Depressive Disorder	7 (46.7%)	5 (29.4%)
Generalized Anxiety Disorder	3 (20%)	4 (23.5%)
Suicidality	0	1 (5.9%)
Mania	0	0
Panic Disorder	1 (6.7%)	1 (5.9%)
Agoraphobia	0	0
Specific Phobia	0	1 (5.9%)
Obsessive Compulsive Disorder	2 (13.3%)	3 (17.6%)
Post-Traumatic Stress Disorder	0	1 (5.9%)
Others	2 (13.3%)	1 (5.9%)
Total	15 (100%)	17 (100%)

DISCUSSION

Attention Deficit Hyperactivity Disorder (ADHD) is prevalent among an estimated 17.8% children worldwide with south-east Asian countries, Pakistan in particular, reporting one of the highest (34%) prevalence in the world [11]. The condition is often diagnosed early in childhood and the low mean age of our research participants i.e., 9 ± 2 years, mirrors this fact [12]. The most common symptoms of ADHD reported by parents (among children) included aggression, hyperactivity and academic problems and research from around the world offer diverse finding. International researches indicate similar prevalence rates for these symptoms [13, 14]. Additionally, anxiety and low self-esteem are frequently observed in children with ADHD globally, with approximately 39.1% experiencing anxiety [14]. Comorbid conditions such as learning disabilities and depression are also prevalent, with 36.5% having learning disabilities and 18.9% experiencing depression [14]. The condition (ADHD) is multi-factorial and has a diverse etiology however, Perry GM and Faraone SV has reported a possible link between parental psychopathology and ADHD among children [15]. The link may be due to a shared genetic origin, as reported by Comings DE *et al.*, or be a product of the shared environment and exposure to common predisposing factors [16]. Genetic factors play a role through the mitochondrial genome, inherited from the mother or x-chromosomal factors while environmental factors could influence in either manner, before birth or after the child is born [17, 18]. Nonetheless, the link does seem to exist and this research too lends its weight to this claim with parental psychopathology being a common finding in the study subjects (children with ADHD). Positive psychiatric history among mother, father and siblings was noted in 39.1%, 32.8% and 48.4% of the cases respectively in this research. A study published in the Child and Adolescent Psychiatry and Mental Health journal found that parental psychopathology significantly affects the prevalence of ADHD in children. This research demonstrated similar conclusion as of ours that parental mental health issues, combined with family adversity, substantially contribute to ADHD symptoms in children [19]. Our study further elaborated that the total effect of parental psychopathology on child ADHD symptoms was significant ($p < 0.051$), which explains the importance of addressing parental mental health in managing ADHD in children. A research in the Italian Journal of Pediatrics showed a high correlation between ADHD in children and a positive history of ADHD symptoms in their parents during childhood. This study revealed that 49.1% of fathers and 30.0% of mothers of children with ADHD had features

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consistent with ADHD themselves, compared to only 1.7% in parents of non-ADHD children. The study showed a strong genetic component in the transmission of ADHD, supporting the notion that a family history of ADHD is a critical factor in the disorder's prevalence [20]. The findings from our study show significant psychiatric diagnoses among parents of children with ADHD, with Major Depressive Disorder (MDD) affecting 46.7% of mothers and 29.4% of fathers and Generalized Anxiety Disorder (GAD) present in 20% of mothers and 23.5% of fathers. These results align with another study by Dadashi M *et al.*, which consistently highlights a higher prevalence of psychiatric disorders among parents of children with ADHD [21]. Shen IH *et al.*, suggests that stress to mothers during pregnancy may affect the children adversely and result in psychological impairments. Reciprocally, child ADHD is also a major contributor to parental psychological distress and consequent psychopathology [22]. The findings in our study are consistent with international research, emphasizing the significant association between parental psychiatric history and ADHD in children. The results regarding the prevalence of GAD, OCD and other psychiatric disorders among parents are also supported by international data. A systematic review and meta-analysis revealed that parental depression, particularly maternal depression, is significantly associated with ADHD in children. This relationship is consistent across various studies, underscoring the genetic and environmental influences on ADHD development [23]. Moreover, international research corroborates the presence of other psychiatric conditions among parents of ADHD children. For example, a Canadian study highlighted that parents of children with ADHD often have higher rates of depressive and anxiety disorders, along with other psychiatric conditions such as Obsessive-Compulsive Disorder (OCD) and Panic Disorder [24].

CONCLUSIONS

Parental psychopathology is found to be associated with ADHD among children. The most common psychopathologies were anxiety spectrum disorders and major depressive disorder. In most cases, the psychopathology had been identified prior to the diagnosis of ADHD among children, as per parents' report.

Authors Contribution

Conceptualization: AHR
Methodology: SA, MAA
Formal analysis: AHR, ZAM, AN, AI
Writing, review and editing: ZAM, SA, AN, AI, MAA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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